

Successful Conversion of Simulation-Based Interprofessional Education in a Pandemic

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PROBLEM

Dental and dental hygiene students participate with up to eight other health professions students in a sequenced, competency-based¹ university-wide, multi-campus, foundational interprofessional education (IPE) curriculum. One component occurs where IPE learning transitions from didactic to experiential and addresses Commission on Dental Accreditation collaborative care competencies. In this simulation, students work in interprofessional teams to provide care for a standardized patient (SP). Due to COVID-19, this simulation moved online.

SOLUTION

The focus was on how the in-person event considerations could be migrated into the online format (Table 1). These included student learning objectives; faculty and student rosters; online student pre-work; simulation session content; student team-SP encounter, faculty-led debrief of teams after SP encounter, assessment, and session evaluation. The focus was ensuring students achieved the same learning objectives, while keeping student/faculty time expectations, facilitator/student ratios, and logistics consistent with the live event. Content on Canvas (Instructure, Salt Lake City), the Learning Management System (LMS), and survey software (Qualtrics.^{XM}) were adapted for the online experience. The scenario was modified to include relevant, up-to-date COVID-19 information that served as the basis for a simulated telehealth encounter with the SP by prerecorded video.

IPE Center and IT staff, and course faculty developed the content, assigned students to interprofessional teams in Canvas, and provided guidelines for teams' live, but remote meeting (synchronous "virtual huddle"). The faculty-led debrief typically conducted in-person was converted to a guided reflection document (Debrief Worksheet) that students completed during their "virtual huddle" and was evaluated by faculty post-event. Faculty preparation moved from live training to a prerecorded podcast with accompanying

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instructional Faculty Guide document. Virtual office hours were available for live interaction between IPE Center staff, students, and faculty throughout the 10-day simulation window.

RESULTS

Since the online simulation was comparable, there was minimal change to the assessments and evaluation framework.² In the in-person simulation, facilitators completed a direct observation checklist. Students completed a Continuous Quality Improvement (CQI) survey and the Interprofessional Collaborative Competency Attainment Survey (ICCAS)³ post event, and SPs provided feedback from the patient's perspective. In the virtual experience, post-event, learners still completed the ICCAS and CQI, developed internally and based on the Freeth/Kirkpatrick framework for program evaluation.⁴ However, direct observation of team behaviors and SP feedback were replaced with facilitators' comments and rubric-based assessment⁵ of teams' Debrief Worksheet reflections. This allowed for comparison of learning outcomes across the virtual and in-person simulation. Overall, students reported a comparable virtual experience, in both satisfaction (Table 2) and skills acquisition (Table 3).

A priority was managing the expectations of students and faculty to support learning. Major successes were Canvas content improvements and virtual office hours. Students were more satisfied with Canvas and content delivery in the online simulation. Canvas, however, proved challenging in facilitating student communication across programs and institutions. Due to quick turnaround and participant volume, the online simulation lacked live faculty-student team interaction; both parties expressed a desire for synchronous faculty-team interactions. Outcomes suggest building upon this experience and continuing to utilize telehealth to successfully teach interprofessional competencies.

References

1. Interprofessional Education Collaborative. (2016). Core competencies for interprofessional collaborative practice: 2016 update. Washington, DC: Interprofessional Education Collaborative.
2. Freeth, D., Hammick, M., Koppel, I., Reeves, S., & Barr, H. (2002). A critical review of evaluations of interprofessional education. London, UK: Learning and Teaching Support Network for Health Sciences and Practice. 63 p. ISBN 095424401X
3. Archibald, D., Trumpower, D., & MacDonald, C.J. (2014) Validation of the interprofessional collaborative competency attainment survey (ICCAS). *Journal of Interprofessional Care*, 28(6) 553-558. DOI: 10.3109/13561820.2014.917407
4. Craig, P., Hall, S., & Phillips, C. (2016). Using the Freeth/Kirkpatrick model to evaluate interprofessional learning outcomes in a rural setting. *Focus on Health Professional Education: A Multi-Professional Journal*, 17(1), 84. doi:10.11157/fohpe.v17i1.124
5. Fines BG. Assessing Reflection. <https://www.smu.edu/-/media/Site/Law/faculty/teaching-resources/Student-Reflection-Rubric.pdf>. Accessed March 19, 2020.

Table 1. Comparison of Considerations for an In-Person vs. Online IPE Simulation

In-Person	Online
Students	
Student Learning Objectives IPE Competencies	<ul style="list-style-type: none"> Identify activities to accomplish the same SLOs in online format: <ul style="list-style-type: none"> Use effective communication tools/techniques to facilitate improved team function; Engage other professionals appropriate to the specific practice situation to participate in shared patient-, client-, community-, and population-focused problem-solving. Communicate information with patients, families, community members, and health team members in a manner that is understandable, avoiding discipline-specific terminology, and Reflect on how learning is applicable to future practice.
Faculty and student rosters	<ul style="list-style-type: none"> Same faculty and students available to participate? Updated deadlines for submitting these to IPE Center?
Online student pre-work	<ul style="list-style-type: none"> Content updates to adapt for online, new cases, etc.
Simulation session content	<ul style="list-style-type: none"> Expand on existing patient (SP) characteristics Revise case content incorporating COVID-19 <ul style="list-style-type: none"> Scenario to incorporate telehealth simulation
Student team-SP encounter	<ul style="list-style-type: none"> Multiple campuses (combine campuses for online version) Number of students per team Number of teams per faculty member How to assign students in Canvas LMS In-person encounter → video recording of SP simulating a telehealth encounter
Faculty led debrief of teams after SP encounter	<ul style="list-style-type: none"> Student team interactions with each other (synchronous virtual team huddle) and the SP (asynchronous) in simulated telehealth encounter Teams submit via Canvas LMS their huddle meeting notes, completed Debrief Worksheet for faculty to view
Assessment	<ul style="list-style-type: none"> Faculty provide comment/feedback in the Canvas LMS on team huddle notes and Debrief Worksheet Faculty rate teams' Debrief Worksheet responses using 3-point assessment scale for reflection-based questions (1=undeveloped; 2=developed; 3=skilled)
Session evaluation (Continuous Quality Improvement survey)	<ul style="list-style-type: none"> Already in place; students completed electronically Qualtrics survey link in LMS instructions to students Used to assess student satisfaction with and perceived learning from the experience Used to track student completion and participation
Faculty Development Considerations	
In Person/Live Zoom Faculty	<ul style="list-style-type: none"> Pre-recorded Faculty Development Podcast included:

Development/Training included: - Multiple Dates / Times - Online Registration for Training - Documented Completion - Review of Simulation Materials - Specific Skills / Challenges - Evaluation of Training Session	<ul style="list-style-type: none"> ○ Online Registration for the Training ○ Documented Completion of Training ○ Overview of the Simulation Content and Activities, including Faculty Guide Document ○ Step by Step Instructions for Faculty Role ○ Evaluation of Training Podcast
Just in Time Training - Review logistics onsite; Q & A	Faculty Guide Document Virtual Office Hours /Email/Phone

Table 2. Summary of Student Continuous Quality Improvement Evaluation (Satisfaction) for Online vs. In-Person (F2F) IPE Simulation**

	SP 2020 (Online) Overall	SP 2020 (Online) Dentistry	FA 2019 (F2F) Overall	FA 2019 (F2F) Dental Hygiene
The pre-work in Canvas contributed to my success in this learning event.	3.64	3.66	3.19	3.33
The pre-work in Canvas provided new information and skills.	3.49	3.38	3.16	3.39
The materials provided were helpful to my team in our activities and discussions.	3.92	3.88	4.02	4.11
The content was relevant to my professional practice.	3.99	3.76	4.14	3.94
The content was relevant to my coursework and academic program.	3.91	3.65	4.07	4.06
The module gave me the opportunity to improve my ability to collaborate with others.	3.98	3.87	4.17	4.06
Overall	3.83	3.70	3.79	3.82

Response means for responses based on a 5-point scale where 1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree and 5= strongly agree

****Note:** Dental and Dental Hygiene students complete elements of the curriculum on different schedules. Thus, the Dental Hygiene students participated in the F2F Anchor 4 simulation experience in fall of 2019, while the Dental students participated in the online Anchor 4 simulation experience in spring of 2020. The two groups are used as a comparison of the measure of each item in different learning environments.

Table 3. Summary of Acquisition of Knowledge and Skills Data – Interprofessional Collaborative Competency Attainment Survey (ICCAS)³

	N (student participants)	Before (Mean)	After (Mean)
SP 2020 (Online)*** University-wide	1121	3.73	4.36
SP 2020 (Online)*** Dentistry	89	3.79	4.37
FA 2019 (F2F)*** University-wide	181	3.48	3.93
FA 2019 (F2F)*** Dental Hygiene	18	3.25	3.96

***p=.000 Responses based on a 5-point scale where 1=poor, 2=fair, 3=good, 4=very good and 5=excellent

**Note: p-value reported based on results of a repeated-measures t-test comparing the group of participants' skill before they participated in the experience vs. after they participated in the experience.